

Accepted Manuscript

Facile fabrication of polylactic acid stereocomplex microspheres

Zhize Chen, Yue Chang, Ziyang Jiang

PII: S0167-577X(17)31435-0
DOI: <https://doi.org/10.1016/j.matlet.2017.09.089>
Reference: MLBLUE 23203

To appear in: *Materials Letters*

Received Date: 21 February 2017
Revised Date: 5 September 2017
Accepted Date: 23 September 2017

Please cite this article as: Z. Chen, Y. Chang, Z. Jiang, Facile fabrication of polylactic acid stereocomplex microspheres, *Materials Letters* (2017), doi: <https://doi.org/10.1016/j.matlet.2017.09.089>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Facile fabrication of polylactic acid stereocomplex microspheres

Zhize Chen*, Yue Chang, Ziyang Jiang

College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai 201620, China. E-mail: chenzhize@dhu.edu.cn.

Abstract

An efficient and scalable method to prepare polylactic acid stereocomplex microspheres (sc-PLA-MPs) is achieved. Low molecular weight polylactic acid containing triethoxysilane end-groups (Si-PLA) were firstly synthesized via coupling reaction of 3-(triethoxysilyl)propyl isocyanate with low molecular weight poly (L-lactic acid) (PLLA) and poly (D-lactic acid) (PDLA). Then, the triethoxysilane terminated poly (L-lactic acid) and poly (D-lactic acid) were dissolved in 1,4-dioxane where the triethoxysilane end-groups could hydrolytic condense in-situ, leading to the formation of the architecture having both PLLA and PDLA arms in one molecule, and consequently the stereocomplex microparticles spontaneously precipitated in the form of spherical microspheres with size of approximately ~5 μm .

Keywords: polylactic acid; microspheres; powder technology; structural

1. Introduction

Preparations of biodegradable microspheres have been attracting much attention because of their potential application in the fields of materials science, bioengineering and environmental science [1-3]. Polylactic acid stereocomplex (sc-PLA) formed by the mixed of poly (L-lactic acid) and poly (D-lactic acid) is a favorable polymer due to its biocompatibility, biodegradability, good mechanical performance, good thermal

Download English Version:

<https://daneshyari.com/en/article/5462525>

Download Persian Version:

<https://daneshyari.com/article/5462525>

[Daneshyari.com](https://daneshyari.com)